



Defense POW/Missing Personnel Office

Operations Directorate — Fact Sheet

Global Personnel Recovery System

ISSUE: Locating evaders/survivors

BACKGROUND: Recovering U.S. evaders during combat operations is traditionally a costly effort. In Vietnam, for every 1.8 U.S. Navy combat search and rescue (CSAR) recovery, one CSAR crewman was killed. For every 1.4 recoveries, one CSAR aircraft was lost. Only 9% of the downed flight personnel targeted by Navy CSAR for rescue were successfully recovered. Likewise, U.S. Air Force CSAR efforts in North Vietnam experienced one CSAR crewman and two CSAR aircraft lost for every 9.2 recoveries. Our most recent experiences in Desert Storm and Bosnia reveal no significant improvement in this capability.

The Joint CSAR Joint Test and Evaluation of the CSAR mission area found that a major contributor to mission failure was the lack of a command, control and communication system capable of satisfying CSAR requirements and providing a real time link between the evader/survivor and rescue forces. These deficiencies often require launching recovery forces prior to determining the location and condition of the evader/survivor. Searching costs lives and resources.

DISCUSSION:

The GPRS is a concept that grew from the desire meet the above mission deficiencies. The initiative is about two years old and is a combination of civil and military requirements. The architecture calls for a combined package to be integrated on to the GPS Block IIF/III constellation, a minimum of four to six ground “Gateways” for data handling and processing, and user segments consisting of base stations and user devices (PCM size cards). A portion of the system will be dedicated to DOD/Civil agency/NATO Allies use with the primary mission of Personnel Recovery. The other portion of the system will service 406 MHz emergency beacons used with the existing SARSAT distress alerting and locating system. Although used primarily in civilian applications, the 406 MHz capability also provides a backup for military forces under non-hostile conditions. The architecture allows two normally exclusive requirements, application and access, to co-exist without compromising security or mission requirements. Civil SAR has specific mission applications with unlimited access requirements by civil communities, while DoD and government agencies have much broader applications with restricted user access.

The space segment is a simple, integrated “Bent Pipe” hardware suite containing UHF (406MHz) and commercial S-Band transponders. No processing will be accomplished onboard the space vehicle.

The ground segment consists of two components: the Gateway and Network Management. The Gateway consists of feeder links and processing hardware. The feeder links are comprised of eight, 3-6m ground antennas. The ground antennas enable the system to track GPS satellites in view and process user transmissions. The Network Management consists of software and switching hardware that manages where the messages are sent within the network.

The Civil user segment will consist of a 406 MHz transponder with an imbedded GPS chip. Future beacons will also possess a limited two-way capability to enable Rescue Coordination

Centers (RCCs) to confirm emergency and verify survivor status, thereby significantly reducing false alarms.

The DoD/government user equipment is comprised of two components: the base station and the user device. The base station is simply a laptop or PC that allows a particular user organization to control their network of devices. The DoD/Government user segment is unique in that the core capability resides on a PCM size card that can be integrated into any number of devices. The base station allows the user to create and control a virtual network within their organization that is available 24/7 on a global basis. The devices within the organization's network can simply be tracked or completely controlled from any location in the world. The organizational network is segregated and protected from any other user in the system. For joint operations specific devices within separate organizations can be re-keyed over the air and then returned to their respective networks when the operation is complete.

The GPRS concept was demonstrated at Joint Expeditionary Force Experiment 2000 in September 2000. The demonstration combined military and civil scenarios at different locations to highlight the capabilities of the system. This demonstration was the first time that rescue forces, command and control, and the survivor/evader were able to communicate with each other in near real time over the horizon.

The military scenario was conducted at Nellis AFB, Nevada and the civil scenario was off the coast of Texas near Corpus Christi. Both scenarios were run simultaneously and tracked near real time from the Air Force Council room at the Pentagon, the Combined Air Operations Center Forward at Nellis, and a conference room at Joint Forces Command in Norfolk. This scenario involved two HH-60's recovering a simulated downed pilot from the desert in Nevada. GPRS allowed the HH-60's to precisely locate and communicate with the survivor/evader over-the-horizon well before the recovery. The system also allowed the HH-60's to use ISOPREP information to verify evader identification so that minimum time was spent in the landing zone.

The civil scenario highlighted the system's interoperability. The Coast Guard received an alert from a simulated "distressed" vessel off the coast of Texas. The RCC dispatched a GPRS-equipped cutter from Corpus Christi for the rescue. The RCC also requested support from US Customs Service (USCS) to locate and relay vessel status. A GPRS-equipped USCS P-3 located the vessel, relayed that the vessel had sunk and survivors were in the water. The RCC tasked an USCG Falcon to respond by dropping a raft to the survivors. All coordination took place using the GPRS except for tasking the Falcon. On two days during the evaluation the scenario in Texas was interrupted when real-world taskings came from the RCC to locate and rescue survivors from two vessels in distress. The GPRS performed flawlessly and helped the USCG save several lives.